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Rubic's Cube: A Conceptual Approach to
the Dimensions of Warfare

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Introduction

The purpose of this essay is to propose a framework for analysis which can be used to better understand the dimensions of modern warfare and the interrelationships which exist within those dimensions which influence war's outcome.

Making good strategic, operational and tactical decisions in a peacetime environment which will meet the nation's wartime requirements is, at best, a long and difficult process. The sheer number of ideas, concepts, opinions and differing points of view to be considered can be overwhelming if one does not have a useful framework for organizing and then examining the key factors, events and interrelationships which characterize modern war.

Since planning inherently involves prediction of the future, there can be considerable uncertainty and intense disagreement over choices and potential outcomes. While recognizing the difficulties, not to mention vagaries of that decision making process, the framework proposed below represents a compromise between the complexities of reality and a need for simplicity. Using the multidimensional nature of a Rubic's Cube as a

model, the intent is to provide a tool for understanding warfare as a concept.

In 1975, Marshal A.A. Grechko, then Minister of Defense of the Soviet Union, described military doctrine as a "national perspective," a product of national goals and objectives. "From the Soviet perspective, military doctrine, ideology and the national purpose must be congruent."¹

Democratic nations, on the other hand, have no such "national perspective" which defines a theoretical military framework. Though theories abound, there is no single overarching or holistic conceptualization which ties together all the elements of modern warfare. In most western nations, for example, theoretical approaches to warfare have evolved from specific events: they do not exist a priori, nor do they emerge from ideological considerations. Only recently, have military and academic strategists in this country begun seriously to look beyond the specific event-driven reaction, in order to focus on the more generic nature and structure of modern warfare.²

After all, it wasn't too long ago that General Eisenhower, addressing the National War College class of 1950 cautioned:

"I have attended a number of military schools, and I have heard people arguing about the difference between strategy and tactics, and finally they come to the conclusion there is a shadow field between the two; and so they talk about strategy and

tactics and then introduce "grand strategy" in order that they can argue some more about the definition of terms...Gentlemen that is not war... Every single second of time that you waste just thinking of these fine shades of differences in terminology is waste."³

In sum, the "Cube" provides an approach to organizing one's thinking; taken in that light, it can be (1) an aid in evaluating current national and military strategy (2) a starting point for developing alternative strategies and (3) a methodology for analyzing and validating the lessons learned from previous conflicts.

Scope.

Understanding the direction of power and force and their effective application on behalf of national objectives is critical to understanding warfare and its component parts. To promote that understanding and for clarity of presentation, it may be useful to define some common terms that will be used throughout the remainder of this essay, as well as describe the multi-dimensional nature of the strategic environment.

War is a national undertaking; it involves all of the powers of a nation and must be coordinated from the highest rungs of policymaking to the basic rungs of execution. Warfare exists on three levels: strategy, operational art and tactics.

Strategy is the art of controlling and utilizing the

the nation's power--or the power of a coalition of nations--including its armed forces. "to the end that its vital interests shall be effectively promoted and secured against enemies, actual, potential, or merely presumed."⁴ The military component of strategy or "military strategy" is "the art and science of employing the armed forces of a nation or alliance to secure policy objectives by the application or threat of force".⁵ In order to avoid definitional confusion, however, the term "strategy" will be used exclusively to connote a level of war. Military strategy, in the context of this paper, is a lesser included component of strategy, albeit shaped in a similar vein as the overall strategy. Operational art is "the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization and conduct of campaigns and major operations".⁶ Tactics is "the art by which corps and smaller unit commanders translate potential combat power into victorious battles and engagements."⁷ Simply put, strategy, operational art and tactics provide the structure for applying the nation's power in the preparation for and the conduct of warfare. Those three levels of war exist within the five environments in which warfare occurs: air, land, sea, sub-sea and space.

Juxtaposing the three levels of warfare with the environmental dimensions in which they occur, then allows one to begin to frame a model to reflect the effects of the interrelationships of those components. The real benefit of

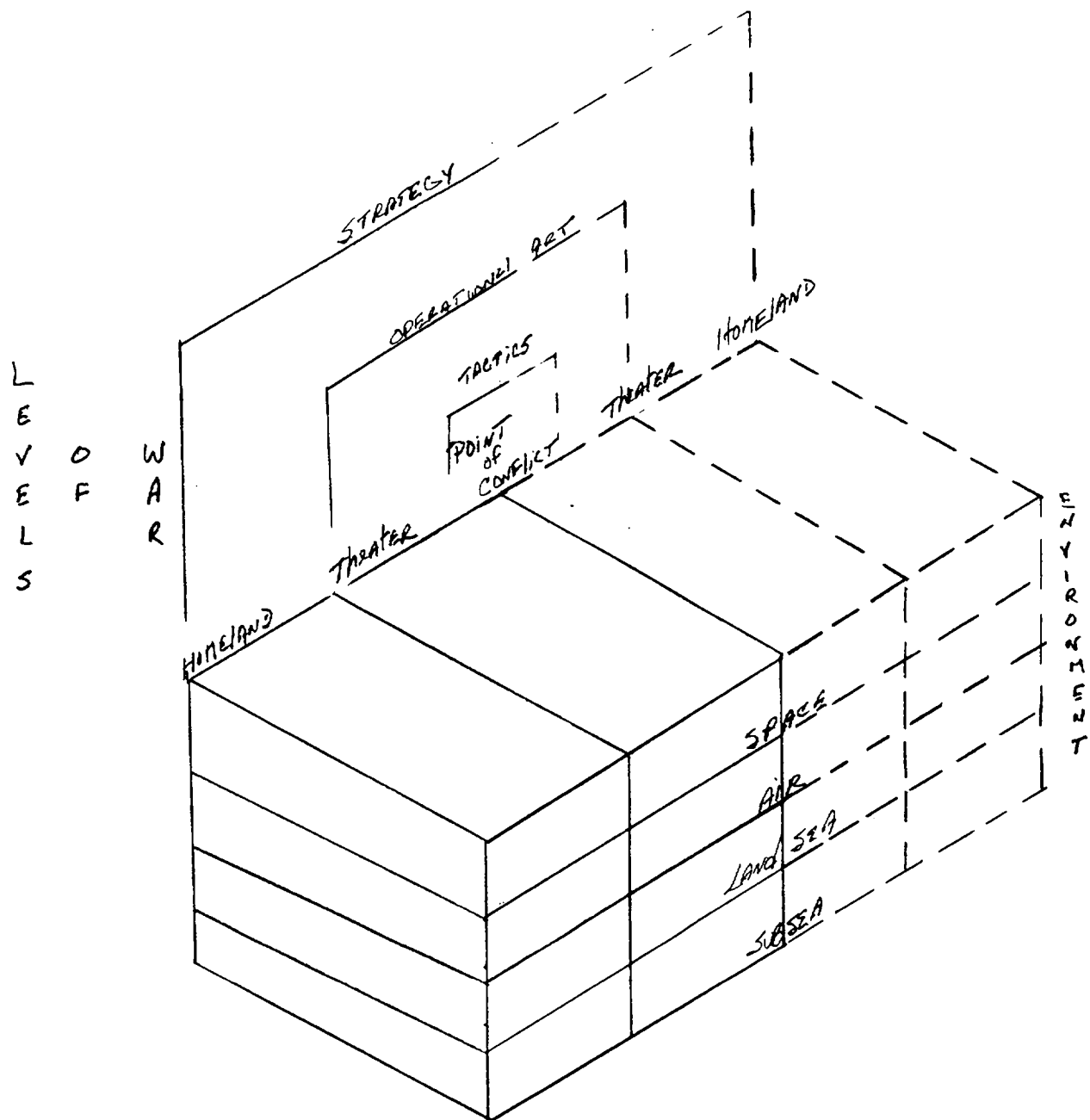
this approach is not apparent until it is superimposed onto the strategic arena.

The strategic arena is best defined as the aggregate of the military potentials of the respective combatants; it includes everything from production of war materials to the morale of the armed forces and stretches from the actual point of armed conflict to the opponents' homelands. Combined with the environment, the strategic arena serves to add both reality and context to the model. (See Figure 1).

A Framework.

Having addressed the components which frame the conceptual context, it is appropriate to direct the reader's attention to the core issue outlined in the introduction to this paper: organizing and examining the key decisions, events and interrelationships which give substance, continuity and cohesion to the framework.

In the past, both military and civilian theorists have concentrated their efforts on examining each level of war exclusively; the tactician studied tactics and the strategist remained riveted on strategy. Few sought to explain the interrelationship of one to the other. Only recently has thought been given to the linkages between the levels of warfare, with some theorists suggesting that these levels are linked at an operational level, either sequentially or



THE STRATEGIC ARENA

Figure 1

through a "natural stratification": the strategic to the operational and the operational to the tactical.

Colonel Joan F. Neenan, for example, discusses the Army's acceptance of the operational level of war, suggesting that the official recognition that there was such a thing as the operational level of war was long overdue, but the appearance of this term in conjunction with the promulgation of a new doctrine--Airland Battle--quite naturally led to the presumption that the two concepts were related. "They are not...The operational level of war is, by definition, above tactics. The operational level of war links tactical activities to strategic goals."⁸ As noted earlier, the military approach to studying the levels of warfare has been level-specific. Emphasis has been placed on the study of events and linkages within a specific level of warfare, rather than the nature of the "whole" and the elements of national power that flow through the respective levels of warfare.

Edward Luttwak, in a more comprehensive and complex approach postulates five levels of warfare which "form a definite hierarchy...Technical effects only matter in so far as they have tactical consequences, but tactical-level action depends in turn upon technical performance to some extent, just as many tactical events make up the operational level of theater strategy, which defines their purpose, while military activity as a whole affects what happens at the level of grand strategy even as the scope of each activity is

determined at the highest level...."9 Strategy, Luttwak contends, "...has two dimensions: the vertical dimension of the different levels that interact with one another; and the horizontal dimension of the dynamic logic that unfolds concurrently within each level."¹⁰

Using Luttwak's concept as a starting point, this paper proposes a multi-dimensional framework addresses conceptually the transition from peace to war.

Insofar as the strategic arena frames the relationship between peace and war, the elements that make up the character and nature of the nation in peace are also the elements that produce the strengths and weaknesses of the nation in war. Ultimately, policy, economics, technology, force structure and national character provide the continuity which gives substance and cohesion to the strategy in both peace and war and, thus, to all levels of war. Rather than merely linking the levels of war, these factors permeate each level of conflict, affecting all levels simultaneously, but to differing degrees and with different results. The impact of these elements on the levels of warfare becomes clearer when they are applied to the basic framework. (See Figure 2)

Similarly, the relationships between the elements, as they run through the levels of warfare, are simultaneously a result of the internal interactions of the elements of the strategy and a reaction to external stimuli such as from an opponent's strategy or some other external condition. In

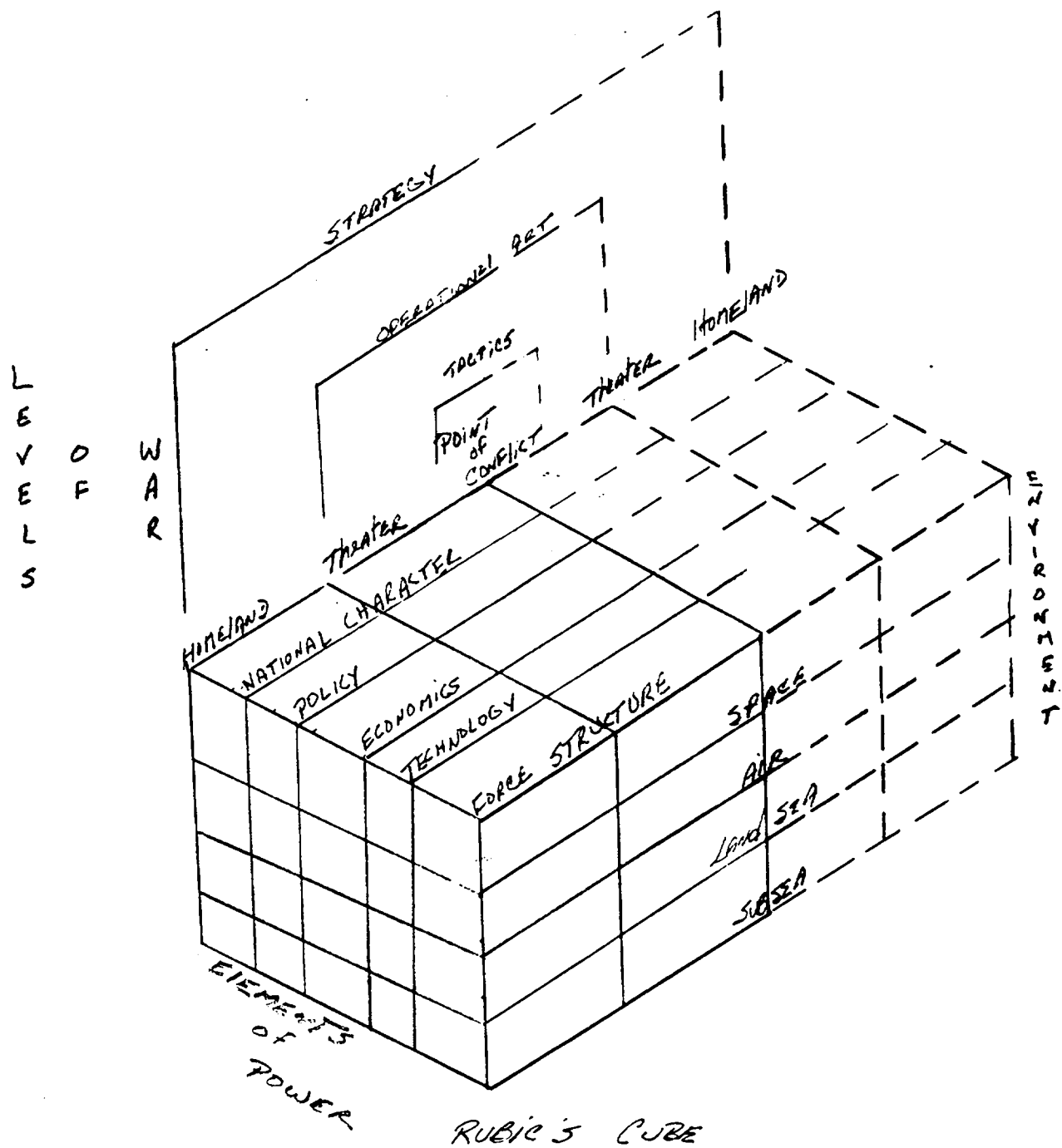


FIGURE 2

either event, the process is dynamic and (1) may create either a beneficial synergism, (2) have no effect or (3) generate a counterproductive antagonism. Furthermore, the three-dimensional "cube" created by the multidimensional framework, since it exists in time, is always in motion.

A synergistic combination of elements in one's own strategy will produce some degree of discontinuity among the elements of the opponent's strategy and vice versa. Conversely, an internal inconsistency in the elements of strategy exposes a vulnerability to the opponent.

In any event, discontinuity produces risk--whether the risks are recognized as such or not. Assuming recognition, the following options are available to the nation: (1) accept the level of risk created by the discontinuity; (2) make the necessary changes or devote sufficient resources to that element in order to eliminate or, at least, reduce the risk; or (3) change the strategy. If, for example, the structure of a nation's military forces, as it exists in peacetime is judged to be insufficient on the battlefield and, therefore, cannot meet the demands of the nation's strategy, then the risk of strategic failure is high. If the weakness disconnect has already been uncovered, then the nation's political process will determine what degree of risk is acceptable. However, the degree of risk to the nation is multiplied significantly if the nation's leadership is unaware of a discontinuity in their strategy and does nothing to rectify the problem.

Consequently, if one can find a source of discontinuity among the elements of the opponent's strategy, the result is a center of gravity. As Clausewitz described the process, "One must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed."¹¹

Inherent to the Rubic's Cube and implicit in Clausewitz's explanation is a true "doctrine of competitive strategies". Not to be confused with the force building doctrine currently in vogue in the Pentagon, this approach capitalizes on relative advantage and strength while exploiting disadvantage and weakness across all elements in the strategic arena. Capitalizing on one's strength, therefore, demands recognition of potential discontinuities and subsequent harmonization across the elements of power and the levels of warfare. By the same token, exploiting the opponent's vulnerabilities requires both a thorough and in-depth understanding of the elements of his power, as well as an appreciation for how he plans to use that power in his conduct of the war.

The Elements of Power

National Character

The first and most comprehensive element of national power centers on the concept of national character and its influence on strategy. As Samuel Taylor Coleridge wrote:

....But that there is an invisible spirit that breathes through a whole people, and is participated by all, though not by all alike; a spirit which gives a color and character both to their virtues and vices...I hold likewise that the difference of nations, their relative grandeur and meanness, all, in short, which they are or do, but all in which they persevere, as a nation, through successions of changing individuals, are the result of this spirit...¹²

National character is the outcome of national experience and includes everything from history to ideology to geography. National character, therefore, cannot fail to influence strategy, for those who formulate, execute and support strategy at every level all bear, at least to some degree, those intellectual and moral qualities which make up the national character. Furthermore, the social, cultural and psychological bases for generating and using military power are apt to be unique. Thus, although most states have some basis for producing and using military power, the melding of that power into a strategy is dependant upon the specifics of potential conflict situations, as they are viewed through the prisms of national character. It is important to remember that strategy is a mirror of attitudes and experiences which reflect the "persona" of the nation.

The national character can be both a source of

strength and weakness. The issue of national will, for example, is central to both the conduct and outcome of a war. The role of national will-- both U.S. and North Vietnamese-- determined not only how the war was fought but it also proved to be the center of gravity for both sides. In this instance it proved key to determination of outcome.

National character, furthermore, directly impacts on the manner in which a nation conducts warfare. De Tocqueville's comparison of the Russians and Americans is both illuminating and relevant:

"The American struggles against the natural obstacles which oppose him: the adversaries of the Russian are men: their former combats the wilderness and the savage life; the latter, civilization with all its weapons and its art: the conquests of one are therefore gained by the ploughshare; those of the other, by the sword. The Anglo-American relies upon personal interest to accomplish his ends, and gives free scope to unguided exertions and common sense of the citizens; the Russian centers all the authority of society in a single arm: the principal instrument of the former is freedom; of the latter, servitude. Their starting point is different, and their courses are not the same; yet each of them seems to be marked out by the will of Heaven to sway the destinies of half the globe."¹³

National character provides the prism through which a people perceive their relationship with the rest of the world. Consequently, it plays a key role in understanding the why and the how of a nation's behavior in the conduct of warfare.

Policy

Policy, in the abstract, is derived from an interpretation of the national interest. Policy, whether national or strategic, provides guidance under which officials work to attain an effect desired. By itself policy achieves nothing until it is carried out by specific plans and specific action. It represents the goals a nation seeks in order to promote, defend or support its national interests in peace, crisis and war. The Clausewitzian dictum that "war is not merely a political act, but also a real political instrument, a continuation of political commerce, a carrying out of the same by other means"¹⁴ is an expression of this enduring reality.

War is not an end in itself. "Political purpose expressed through policy dominates strategy by the analysis of objectives. Objectives should not merely be stated, they must be analyzed, for national strategy is concerned with the achievement of a hierarchy of objectives that in turn derive from the political purpose of the state."¹⁵ Strategists, operational commanders and tacticians must not only understand war and warfare, they must understand the relationship between war and policy, as it affects strategic, operational and tactical decisionmaking. "It is the special function of high command to make certain there is conceptual unity, that all agree upon the effect desired."¹⁶ This requirement is even more critical today.

The advent of long range, instant communications firmly places both policy and policymakers in the strategic arena at each and every level of warfare on a real-time basis.

The lack of continuity between the strategic and operational levels can be demonstrated in the following example: crossing the East-West German border to punch off a Soviet penetration would seem to be a sound operational judgement for SACEUR. However, this judgement may be overridden by policy considerations revolving around the issue of German reunification. At the strategic level of war, the policy issue of German reunification has little effect on the strategy of Forward Defense. However, at both the operational and tactical levels of war, the policy issue of German reunification has a profound effect on the operational commander's ability to fight the war.

As Raymond Aron, in his seminal work, Peace and War, points out, "...policy is the intelligence of the personified state". Aron then goes on to assert that "Policy does not control merely the conception of the whole conflict...it also determines the conduct of a battle, the risks an army leader must accept and the limits the strategist must establish for the technicians' initiatives."¹⁷ Clearly, policy operates at each level of warfare; it endows the strategy with purpose and relates means to ends. Conversely, the strategist does not insure that policy is understood and carefully considered at each level of warfare is doomed to failure.

Thus, for example, American military forces in South Vietnam might have been more effective at the tactical level by showing a greater willingness to close with the enemy instead of relying so heavily on indirect fire power. The price, however, would have been much higher casualties at the tactical level and an increased anti-war activism aimed at undermining the strategy at the national level.

Economics

That economics plays a major role in a nation's ability to defend itself and pursue its national interests is hardly new. Throughout history, the relationship between economics and strategy has been the source of both success and major strategic miscalculation. The need for continuous access to oil, for instance, plays a major role in the formulation of current U.S. strategy, much as it did in determining the scope and intensity of German operations during World War II. The security of the Rumanian oilfields was a constant concern for Hitler and the German planners. Because of its importance, Hitler was keenly interested in Balkan political developments and could only view the Soviet military advance into Bessarabia as a threat to Germany's security." Subsequently, when Hitler attacked the USSR, one of the principal objectives of German military operations was capture of the oil producing regions of the Caucasus. Nevertheless, throughout the war German strategy, operational

art and tactics were hindered by problems which resulted directly from severe oil shortages.

Likewise, in the maritime environment, the close relationship between economics and warfare at the strategic, operational and tactical levels can be seen clearly in the Japanese experience during WWII. In essence, the economic continuum flowing through the three levels of war was severely dislocated. Though Japan had successfully overrun the major oilfields of Southeast Asia, its ability to transport the captured oil back to the home islands proved to be a much more difficult task. By 1944, Japanese merchant marine losses to U.S. submarines were so severe that Japanese naval operations had to be curtailed significantly, both at the operational and tactical levels, due to lack of fuel oil. Japan's lack of resources, the gap in its economic element, created a center of gravity which was identified and then exploited by its adversary. In other words, the scarcity of real resources created a significant vulnerability across all three levels of warfare eventually leading to defeat.

Perhaps more important than the above discussed resource vulnerabilities is the impact of the domestic economy on strategic decisionmaking in both peace and war. This brings us squarely to the concept of the mobilization base and goes to the heart of the relationship between economic capacity and military power. What types of production will be required in any possible military

encounter in the future and what facilities currently exist or are readily convertible to meet that potential requirement? And how important is the existing mobilization base compared to the potential mobilization base? Time defines the difference. Is the strategy based on a "come as you are" requirement or does it assume time to fully mobilize the industrial capacity of the nation?

Simply put, the effect of the economic transition from peace to war on the ultimate outcome of the war, is a function of both the time available for mobilization and the composition and structure of the national industries. The economic continuum flowing through the levels of war, therefore, dictates that a nation's leadership must not only coordinate the nation's resources and their application to their strategy, but it must do so within the time requirements necessary to implement that strategy.

Technology

Clausewitz viewed armed conflict as "a mental and physical contest waged by means of the latter".¹⁸ The prominence of technology in the industrial age, however, pointed to the conclusion (to quote the American Field Service Regulations of World War II) "that victory in modern war hinges on troops and commanders mastering a series of complex skills, which to a large extent are technical skills."¹⁹ Where once war was waged by men using

machines, now war was seen as a contest between machines that were served, maintained and operated by men.

Over the course of the twentieth century, the U.S. military made steady progress toward a way of warfighting aimed at minimizing human casualties by emphasizing the "machine" as the primary means of doing violence to the enemy on the battlefield. The classic wars of human attrition gave way to wars of movement which, by definition, were won or lost through attrition of the tools of movement: the tank, the ship, the airplane. "People" attrition became ancillary to the question of war's outcome.

In World War II, for example, both the U.S. and the USSR were able to outstrip Axis industrial capacity in the key areas of machine production. Ultimately, the consequence was victory; we had outproduced the Axis capability to either destroy our machines or replace their own losses.

Since WW II, however, technology has again altered both the preparation for and the conduct of warfare. In the case of the United States, rapid but expensive technological improvement of the tools of movement warfare, together with the shrinkage in the size of force the nation was willing to support, dictated that we concentrate resources in a technologically sophisticated, but numerically smaller force. The USSR, on the other hand, has been more evolutionary in its

development of weapons systems and sought to maintain a larger, but less technology-dependent force.

Furthermore, as the U.S. modernized its forces, it did so on a set number basis, that is, sizing the production capability to the total number of units required. Fiscally responsible as it might be, this approach results in a production capability which erodes in peacetime, while retaining no capability for expansion in wartime. As a result, what once was a strength-- the means to rapidly and massively produce the tools of modern warfare-- has now become a strategic vulnerability with centers of gravity that extend throughout the strategic arena. As our weapons have become more sophisticated and more expensive our capacity to produce them, either rapidly or in quantity diminished almost geometrically.

At the strategic, operational and tactical levels, the vulnerability inherent in our "means of production" (to borrow a Marxist term) is transferred to our "means of combat". An antagonism between the elements of technology and economics emerges: we can no longer afford to lose machines in combat because we can no longer afford to replace them. The antagonism between the "means of production" and the "means of combat", as the technology continuum extends between the elements of strategy, produces a very serious ends-means disconnect or, in effect, dislocating the strategy.

Force Structure

Force structure is the final element in the strategic arena. Combining force composition and size, force structure operates at all three levels of warfare. It includes existing forces (active and reserve components), allied forces and programmed forces (at least those forces programmed to be organized during the timeframe required by the strategy).

The impact of force structure on the conceptual framework centers on the sustainability of that force structure to the level anticipated in the strategy, the operational level and the tactics. As the authors of Military Effectiveness point out, "Even in 1941 German forces were undoubtedly too small, too ill-equipped, and too badly supported for many of their strategic tasks. Above all they lacked an effective logistics structure to overcome the distances and weather of the theater. Few infantry formations were mechanized. Strategic planning was incomplete and often careless, and the Germans generally refused to face the problems inherent in conquering a country with continental proportions."

Existing forces are the reality of today's strategy. They are the baseline to which changes must be made. Given the long lead time and tremendous expense of additions (not to mention the political unpopularity of major

restructuring) to the existing force structure. Most changes are made incrementally and "on the margin". Thus, although objectives should determine strategy and strategy should then determine force structure, more often than not, existing force structure determines not only strategy but it also defines the uses of that force structure at the operational and tactical levels of war.

Naval vessels offer an interesting illustration of this paradox. For example, the aircraft carrier *Vinson* joined the fleet in 1981 and is expected to be retained in service until the year 2025. It is interesting to try and predict the world situation in 2025 and then forecast a role, if any, for aircraft carriers in carrying out U.S. strategy. On the other hand, it is relatively simple to post a strategy on the existence of the aircraft carrier and then try to fit the strategy to whatever the world situation is at the time. Thus, the force structure which exists in peace is the same force structure a nation is committed to war, even though the force structure might be reconfigured for the strategy. In other words, force structure decisions made today dictate strategic choices for a far environment which is both unknown and unknowable.

The Cube in Action

At this point in the discussion, the reader may be asking "or what?" The answer to that question lies in being the framework. As in a Rubik's Cube, all the elements of power, the levels of warfare and the dimensions of the strategic arena--the facets of the cube--must be aligned both vertically and horizontally. Otherwise, the system has little hope of accomplishing its objectives.

Using the U.S. military position in Europe as a test case, an argument can be made that Airland Battle doctrine, as it is implemented at the operational and tactical levels by U.S. forces in Europe, has the potential to seriously dislocate U.S. strategy.

General Donn Starry, the "father" of Airland battle doctrine, in his foreword to Richard Simpson's book, Spook in the Swift, argues that since U.S. forces are likely to be committed where there is insufficient maneuver space to conduct a battle of attrition based on a defense in depth, the tactics employed should seek to:

- deny the enemy access to his objectives
- prevent the enemy from achieving the impact of mass and momentum and
- seize the initiative by maneuver, surprise, and deception

the integrity of the enemy's operational concept,
forcing him to break off the attack in a
resounding defeat.

In order to meet the criteria established by that doctrine, heavy emphasis has been placed on mobility and the use of machines to wrest the initiative from the enemy. However, even in a short war, the combination of lethality typical of the modern battlefield and the limitations on the U.S. ability to rapidly replace its mechanized losses, calls into serious question the feasibility of implementing the doctrine at either the tactical or operational levels. In Europe, to cite but one example, U.S. plans call for heavy mechanized forces to initially hold any penetration to a minimum and then to conduct a counterattack to regain the initiative. The industrial base is not capable of sustaining the force structure when it is committed to the uses envisioned by Airland Battle doctrine.

Returning to the previously discussed antagonism between the economic and technology elements, the interrelationships among the levels of warfare become even clearer. The mere cost of slowing and, ultimately, stopping the opponent at the tactical level may be so great that machine attrition alone, not to mention crew attrition, could be sufficient to prevent any attempt at trying to gain the initiative at the operational level. Furthermore, the necessity to withhold a

counterattack force from the initial defensive array, may, by itself, guarantee both tactical and operational failure.

At first glance, the force structure seems to complement the tactics prescribed by Airland Battle doctrine. However, upon closer examination, it is apparent that the tactic was devised without reference to either the technology imperative or the inability of the economic base to meet the potential demand created by it. In this instance, one can argue, the tactic is the unintentional result of the force structure, not a deliberate manifestation of the strategy.

Conclusion

The preparation for and conduct of war is a matter of great uncertainty for a nation and its leadership. The issues are multidimensional, extremely complex and often generate intense disagreement over choices while, at the same time, the potential risk of misjudgement is great and the consequences catastrophic. Unless there is a conceptual framework which underpins the decision making process with regard to orchestrating the elements of power in the preparation and conduct of war across all of its levels, then the nation is subject to wasting its resources in peacetime while suffering defeat in wartime.

The purpose of this paper has been to suggest a framework for analysis which recognizes the complexities of warfare and offers the reader a simple but useful tool for understanding the strategic arena and all that it entails. Once the logic suggested by the Rubik's Cube model is understood, in the context of the interrelationships of its facets, the series of issues which frame the nation's preparation for and conduct of war become clear. War is a national undertaking; it involves all of the power and resources of a nation.

- 1 Herbert I. London, Military Doctrine and the American Character. (New York: National Strategy Information Center, Inc., 1984), p.6.
- 2 Some outstanding work has already been done in this area by Edward Luttwak and Richard Simkin.
- 3 Speech given at the National War College, 30 Oct 1980, by General Dwight D. Eisenhower.
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- 5 U.S. Army, Department of. Operations, Field Manual 100-2. (Washington D.C. May 1986). p.9
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- 15 Ibid., Eccles., 1978 APSA Speech.
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- 17 Raymond Aron, Peace and War. Translated by Richard Howard and Anita Baker Fox, (Malabar, Florida, Robert E. Krieger Publishing Co., 1981) p.23.
- 18 Clausewitz, On War p. 126.
- 19 Martin van Creveld, Technology and War. (New York, The Free Press., 1989) p.225.